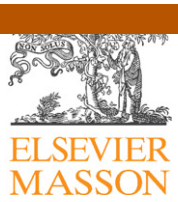
Archives of Cardiovascular Disease (2013) 106, 461—464





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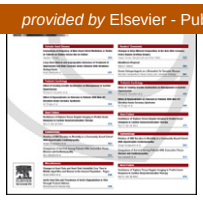

# Oral communications — Friday, 20 September 2013 — 8 h 00—9 h 45

01

## Feasibility and reproducibility of tissue motion annular displacement of mitral valve in children with and without heart disease

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*Objectives.*— Little is known about parameters of systolic left ventricular (LV) function using speckle tracking (ST) in children. The aim of this study was to define the feasibility (F) and reproducibility (R) of tissue motion annular displacement of mitral valve (TMAD) in healthy children (HC), in children with heart disease (HD) and assess the correlations between TMAD and usual LV systolic function parameters (LVSFP).

*Methods.*— We prospectively included 22 children with HD (13 boys, mean age 104 months) and 22 HC (12 boys, mean age 116 months). In an apical four chambers view, one region of interest (ROI) was placed at the septal and lateral parts of the mitral annulus and one at the apex. The displacement of the midpoint between the two annular ROIs toward the apex was automatically calculated by QLAB 9® software (Philips).

*Results.*— TMAD indexed F was 100% (CI95% 94.8—100%) in children with and without HD and 86% (CI95% 71.5—100%) in healthy children. F of TMAD was not significantly different between HC and children with HD. Intraobserver variability (V) of TMAD was respectively 19% and 11% in HC and in children with HD. Interobserver V of TMAD was respectively 19% and 16% in HC and in children with HD. TMAD was not correlated to age nor to body surface area (BSA) nor to LV ejection fraction in HC whereas indexed TMAD was correlated to stroke volume ($r = 0.591$, $p = 0.0122$), cardiac index ($r = 0.532$, $p = 0.0241$), indexed TAPSE ($r = 0.691$, $p = 0.0034$) and conversely correlated to end-diastolic (ED) LV diameter ($r = -0.677$, $p = 0.0041$), to EDLV volume ($r = -0.629$, $p = 0.0076$) and to end-systolic LV volume ($r = -0.616$, $p = 0.0090$) in HC.

*Conclusion.*— TMAD seems an easy measurable marker with an excellent F and R to assess the mitral annular displacement. It seems independent of BSA and well correlated with stroke volume. The advantage of TMAD over tissue Doppler imaging relies on the independence on angle and measurement of strain vectors not parallel to the ultrasound beam. TMAD is an interesting tool in children. Its accuracy to estimate systolic function needs to be further investigated in children.

http://dx.doi.org/10.1016/j.acvd.2013.06.005

02

## Impact of micro-transoesophageal echocardiography for congenital cardiac surgery in the operating room and the pediatric intensive care unit

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*Purpose.*— Transoesophageal echocardiography (TEE) impact on post-operative issue is unknown and its application in operating room (OR) and pediatric intensive care unit (PICU) debated.

Aims:

—to describe residual lesions by TEE in the immediate and follow-up post-operative period;

—to determine the feasibility of a new micro-TEE probe dedicated in small infants.

*Methods.*— One hundred and ninety-six patients were prospectively enrolled. From 2010 to 2012, mini-multi-pediatric TEE (4—7 MHz, tip-length 27 mm, tip-width 10.6 mm) was performed in 176 patients (median weight 15.1 kg [4.5—7]). From 2013, micro-TEE (3—8 MHz, tip-length 18.5 mm, tip-width 7.5 mm) was performed in 20 patients (median weight 11.7 kg, [3.5—40]). Operated lesions were (1) left-to-right shunt, (2) pulmonary obstruction with VSD, (3) left AV valve regurgitation (LAVVR). Residual lesions were assessed by TEE in the OR and by TTE at the last visit (mean follow-up 5 months after surgery). Lesions were classified as severe [residual shunt (RS) > 5 mm, maximal pulmonary gradient (PG) > 50 mmHg, LAVVR grade 4], as moderate (RS 2—5 mm, PG 35—50 mmHg, LAVVR grade 2—3), as mild (RS < 2 mm, PG < 35 mmHg, LAVVR grade < 2). Micro-TEE image quality was scored from 0 to 2.

*Results.*— One hundred and ten patients (56%) had none residual lesions in the OR. Significant lesions were observed in six patients (3%), all have had a redo surgery (one RS, two PG, three LAVVR). Moderate lesions were observed in 17 patients (9%): one RS (stable), nine PG (one regression, four stable, four aggravated lesions: three awaiting for reoperation and one dilated by balloon), seven stable LAVVR. Mild lesions were observed in 63 patients (32%): 30 RS (24